

RADIOCARBON DATES FROM HALFIAH GIBLI (ABADIYEH), A PREDYNASTIC SETTLEMENT IN UPPER EGYPT

Kathryn A Bard

Department of Archaeology, Boston University, 675 Commonwealth Avenue, Boston, Massachusetts 02215, USA.

Email: kbard@bu.edu.

ABSTRACT. In 1989 and 1991, wood charcoal samples were excavated at a Predynastic settlement in Upper Egypt, Halfiah Gibli (HG). A second site, Semaineh (SH), was also investigated, but as the ceramics there were mostly from the Old Kingdom, excavations were concentrated at HG. Wood charcoal was obtained in undisturbed contexts, in association with Nagada culture potsherds and lithics, ranging in date from about 3700 BC to 3200/3100 BC. These new radiocarbon dates provide more data for the relative phases of the Nagada culture, formulated mainly from ceramic seriation.

INTRODUCTION

The Predynastic period in Egypt, when complex society arose, spans most of the 4th millennium BC, culminating in about 3100–3000 BC with the emergence of Egypt's Early Dynastic state. While a number of Predynastic cemeteries have been excavated, beginning with Flinders Petrie's excavation of over 2000 burials at Nagada in 1894–95 (Petrie and Quibell 1896), Predynastic settlements have not been well preserved and their excavation was frequently overlooked in favor of the much more spectacular burial evidence.

In 1989, initial investigations (surface survey and several 1 × 1 m test excavations) were conducted by K Bard at the Predynastic settlements of Halfiah Gibli (HG) and Semaineh (SH) in Upper Egypt (26°00'N, 32°22'E). These 2 Predynastic sites were later excavated in 1991.

Sites HG and SH were first mentioned by Petrie in his well-known volume, *Diospolis Parva, The Cemeteries of Abadiyeh and Hu* (1901), in which his Sequence Dating system for seriating Predynastic pottery was explained. This ceramic seriation system was later modified by Werner Kaiser (1957), and as a result, the 3 relative phases of Predynastic culture are now called Nagada I, II, and III, after the largest-known Predynastic site. More recently, several studies of ¹⁴C dates from settlements have been published by Hassan (Hassan 1984; Hassan 1985; Hassan and Robinson 1987), and an absolute chronology of the Nagada culture relative phases has been collated by Hendrickx (1996: 64) based on Hassan's radiocarbon dates. ¹⁴C dates obtained from wood and matting excavated at Abydos (cemeteries U, B, and the Early Dynastic royal cemetery) by the German Institute of Archaeology, Cairo, provide an even longer sequence of calibrated dates, from the Nagada Ib phase to the end of the 1st Dynasty but with a long gap in dates between the Nagada Ic and Nagada IId phases (Görsdorf et al. 1998).

Table 1 Hendrickx's Absolute Chronology of the Predynastic Nagada Culture

| Period | cal BC |
|--------------------------|----------------------------|
| Nagada Ia–Iib | approximately 3900–3650 BC |
| Nagada Iic–IId2 | approximately 3650–3300 BC |
| Nagada IIIa1–IIIb/Dyn. 0 | approximately 3300–3100 BC |

The purpose of this article is to provide further correlation between the relative dates of Nagada culture phases and ¹⁴C dates.

METHODS

Situated on spurs of the low desert above the floodplain and to the south of the el-Ranan canal, both HG and SH sites were deflated and had been disturbed by modern cultivation and/or farming activities (Bard 1989). In 1989 and 1991, charcoal samples were collected from deposits in the remaining areas that did not seem to have been disturbed by later human activity. During the excavations, relative dates were given to the excavated deposits using Kaiser's (1957) seriation of Predynastic Nagada culture pottery classes.

The 1991 excavations at SH revealed a site with a great mixture of ceramics, predominantly dating to the Old Kingdom (about 2686–2125 BC) but mixed with a few Predynastic and New Kingdom sherds. As SH seemed to be an Old Kingdom site, excavations were discontinued there. Petrie had excavated a cemetery area (H) at Semaineh on a small spur east of the settlement and this area is probably where the mainly Nagada III grave goods were found (Bard 1992).

The 1991 excavations at HG revealed the settlement associated with the Predynastic cemetery (Abadiyeh) excavated by Petrie. There was no evidence of any structures at the site and 9 units were excavated in the few undisturbed deposits, i.e., in margins to the north and east of the main spur (Bard 1992). All of the ceramics excavated at HG are from the Nagada Ic to Nagada Iib–c phases (Sally Swain, personal communication).

Excavated charcoal samples were collected with metal trowels, and were then wrapped in aluminum foil and placed in plastic sample bags.

The 1989 charcoal samples were submitted to the Oxford Radiocarbon Accelerator, Research Laboratory for Archaeology. The 1991 charcoal samples were submitted to the Radiocarbon Laboratory of the Institute for the Study of Earth and Man at Southern Methodist University (Dallas, Texas, USA), under the direction of Herbert Haas. This laboratory later moved and became the WRC Radiocarbon Laboratory, Water Resources Center, Desert Research Institute (Las Vegas, Nevada, USA).

Table 2 Calibrated ¹⁴C dates from the predynastic sites of Halfiah Gibli and Semaineh

| Sample No. | Lab No. | BP | Calibration | |
|------------|----------|---------------|---|--|
| | | | 68.2% | 95.4% |
| HG-1 | OxA-2182 | 4590 ± 80 BP | 3510 BC (19.8%) 3390 BC (19.5%) 3240 BC (28.9%) | 3420 BC 3650 BC (95.4%) 3000 BC |
| HG-2 | OxA-2183 | 4810 ± 80 BP | 3700 BC (2.8%) 3670 BC (61.5%) 3400 BC (3.9%) | 3680 BC 3760 BC (78.7%) 3470 BC (16.7%) 3370 BC |
| SH-3 | OxA-2184 | 4860 ± 80 BP | 3760 BC (46.5%) 3600 BC (21.7%) | 3620 BC 3950 BC (95.4%) 3350 BC |
| SH-4 | OxA-2185 | 4020 ± 80 BP | 2850 BC (4.7%) 2670 BC (61.8%) 2420 BC (1.7%) | 2810 BC 2900 BC (95.4%) 2300 BC |
| HG-50 | DRI-2833 | 4604 ± 91 BP | 3520 BC (46.2%) 3240 BC (12.0%) 3160 BC (10.0%) | 3310 BC 3650 BC (95.4%) 3000 BC |
| SH-150 | DRI-2907 | 4933 ± 136 BP | 3950 BC (17.7%) 3820 BC (47.7%) 3560 BC (2.8%) | 3840 BC 4050 BC (95.4%) 3350 BC |

Table 2 Calibrated ¹⁴C dates from the predynastic sites of Halfiah Gibli and Semaineh *Continued*

| Sample No. | Lab No. | BP | Calibration | | | |
|------------|-----------|---------------|-----------------|-----------------|-----------------|-----------------|
| | | | 68.2% | | 95.4% | |
| HG-332 | DRI-2834 | 5060 ± 110 BP | 3970 BC (63.5%) | 3750 BC (4.7%) | 4250 BC (1.7%) | 4100 BC (93.7%) |
| HG-341 | ETH-13011 | 4680 ± 65 BP | 3620 BC (5.3%) | 3600 BC (62.9%) | 3640 BC (95.4%) | 3340 BC |
| HG-349 | DRI-2835 | 4290 ± 140 BP | 3100 BC (43.5%) | 2830 BC (22.5%) | 3350 BC (95.4%) | 2450 BC |
| HG-526 | DRI-2906 | 4498 ± 131 BP | 3370 BC (66.6%) | 3010 BC (0.8%) | 3550 BC (95.4%) | 2850 BC |
| HG-545 | SMU-2754 | 4860 ± 70 BP | 3720 BC (46.8%) | 3620 BC (21.4%) | 3800 BC (92.5%) | 3500 BC |
| HG-655 | DRI-2905 | 4731 ± 132 BP | 3650 BC (68.2%) | 3360 BC (0.8%) | 3800 BC (95.4%) | 3050 BC |

RESULTS, 1989 SAMPLES

Four samples of wood charcoal were taken in test pits at HG and SH. The calibrated dates of these samples were previously published (Bard 1991), but have been re-calibrated here using OxCal v3.8 (Bronk Ramsey 2002).

HG-1, OxA-2182

¹⁴C age: 4590 ± 80 BP
 Cal age(s), 68.2% probability: 3510 BC (19.8%) 3420 BC
 3390 BC (19.5%) 3300 BC
 3240 BC (28.9%) 3100 BC
 95.4% probability: 3650 BC (95.4%) 3000 BC

Wood charcoal taken 5–10 cm below the surface in an ancient midden in the uncultivated area of HG, at the bottom of a small wadi full of Predynastic sherds and lithics, which had washed down the slope. Collected 1989 by K Bard.

Comment: Calibrated dates of this sample fall within Hendrickx's phase of Nagada IIc–IIId2, about 3650–3300 BC, the middle Nagada phase.

HG-2, OxA-2183

¹⁴C age: 4810 ± 80 BP
 Cal age(s), 68.2% probability: 3700 BC (2.8%) 3680 BC
 3670 BC (61.5%) 3510 BC
 3400 BC (3.9%) 3380 BC
 95.4% probability: 3760 BC (78.7%) 3490 BC
 3470 BC (16.7%) 3370 BC

Wood charcoal taken 5–10 cm below the surface in a small, ancient midden in the uncultivated area of HG. Collected 1989 by K Bard.

Comment: Calibrated dates of this sample fall within Hendrickx's phase of Nagada IIc–IIId2, about 3650–3300 BC, the middle Nagada phase, but earlier than sample HG-1, OxA-2182.

SH-3, OxA-2184

¹⁴C age: 4860 ± 80 BP
 Cal age(s), 68.2% probability: 3760 BC (46.5%) 3620 BC
 3600 BC (21.7%) 3520 BC
 95.4% probability: 3950 BC (95.4%) 3350 BC

Wood charcoal taken 5–10 cm below the surface of a test pit in an area south of a mudbrick feature visible on the surface of the site. Collected 1989 by K Bard.

Comment: This date is from the earliest phase of Predynastic culture (Hendrickx's Nagada Ia–IIb, about 3900–3600 BC).

SH-4, OxA-2185

¹⁴C age: 4020 ± 80 BP
 Cal age(s), 68.2% probability: 2850 BC (4.7%) 2810 BC
 2670 BC (61.8%) 2450 BC
 2420 BC (1.7%) 2400 BC
 95.4% probability: 2900 BC (95.4%) 2300 BC

Wood charcoal taken 5–10 cm below the surface in a test pit within a rectangular feature of decayed mudbrick. Collected 1989 by K Bard.

Comment: This feature can now be dated to the Old Kingdom. The presence of predominantly Old Kingdom sherds on the surface of this site helps to explain this date.

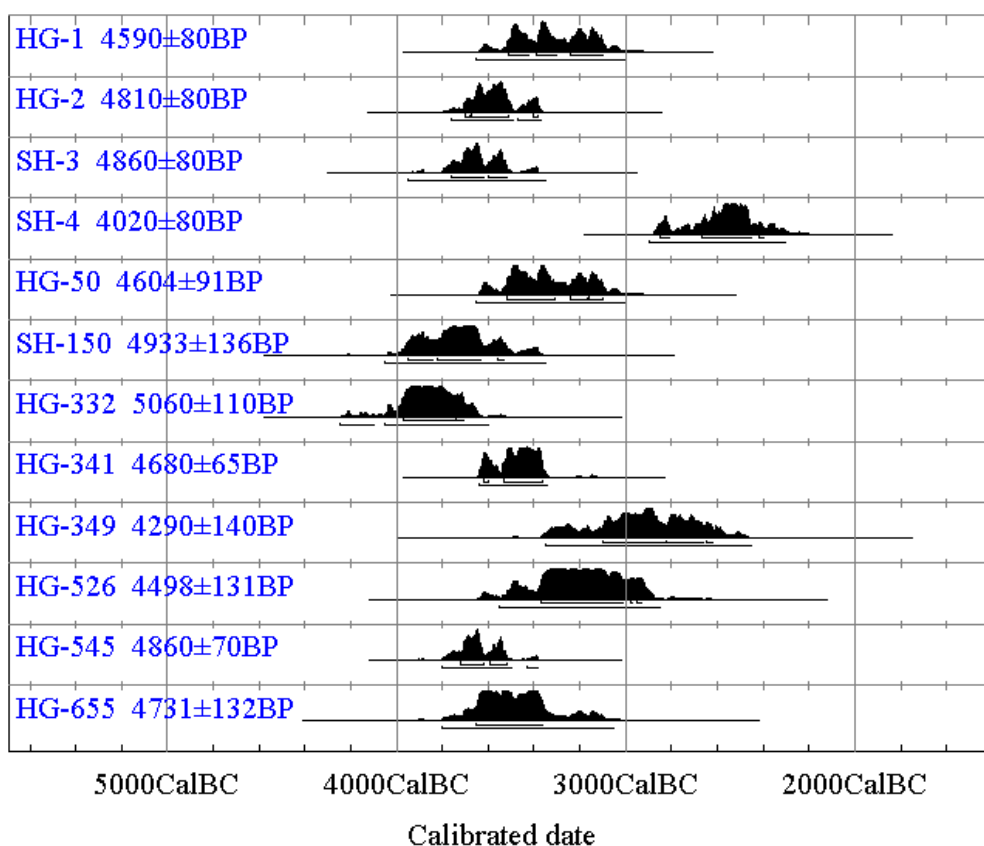


Figure 1 ¹⁴C dates for Halfiah Gibli (HG) and Semaineh (SH). Atmospheric data from Stuiver et al (1993), Oxcal v3.8 Bronk Ramsey (2002), cub r:4 sd:12 prob usp[chron]

RESULTS, 1991 SAMPLES

Eight samples of wood charcoal were taken from excavated units at HG and SH. A 9th sample (HG-399, DRI 2836) “came out very small, and its conversion to benzene was a speculative undertaking” (Haas, personal communication). Hence, this sample is not listed here. Calibration uses OxCal v3.8 (Bronk Ramsey 2002).

HG-50, DRI-2833

¹⁴C age: 4604 ± 91 BP

Cal age(s), 68.2% probability: 3520 BC (46.2%) 3310 BC

3240 BC (12.0%) 3170 BC

3160 BC (10.0%) 3100 BC

95.4% probability: 3650 BC (95.4%) 3000 BC

Wood charcoal excavated in a deposit of gravelly silt about 15–30 cm below the surface that had been washed down from the main settlement along with a number of Predynastic artifacts, mainly potsherds and lithics. Collected 1991 by H Raab-Rust.

Comment: This redeposited sample and associated artifacts suggest movement of village artifacts and ecofacts by wadi activity after Nagada culture occupation of the site.

SH-150, DRI-2907

¹⁴C age: 4933 ± 136 BP

Cal age(s), 68.2% probability: 3950 BC (17.7%) 3840 BC

3820 BC (47.7%) 3630 BC

3560 BC (2.8%) 3530 BC

95.4% probability: 4050 BC (95.4%) 3350 BC

Wood charcoal sample found next to a Meydum ware sherd (Old Kingdom) 5–10 cm below the surface. Other pottery in this feature, which was thought to be a kiln for Old Kingdom bread molds, was a great mixture of Old and New Kingdom wares with some Predynastic potsherds. The majority of sherds were Old Kingdom bread molds. Collected 1991 by S Savage.

Comment: Although this sample was collected in an Old Kingdom context, its calibrated dates are much earlier, suggesting a disturbed feature with a mixture of artifacts from different periods (Predynastic and Old Kingdom).

HG-332, DRI-2834

¹⁴C age: 5060 ± 110 BP

Cal age(s), 68.2% probability: 3970 BC (63.5%) 3750 BC

3740 BC (4.7%) 3710 BC

95.4% probability: 4250 BC (1.7%) 4100 BC

4050 BC (93.7%) 3600 BC

Wood charcoal associated with a semi-circular hearth approximately 77 cm below the surface. Collected 1991 by H Raab-Rust.

Comment: No pottery or lithics were found associated with this hearth, excavated well below the stratigraphic location of all Predynastic artifacts. It is the earliest date obtained at this site, possibly predating Nagada culture occupation there.

HG-341, ETH-13011

¹⁴C age: 4680 ± 65 BP

Cal age(s), 68.2% probability: 3620 BC (5.3%) 3600 BC

3530 BC (62.9%) 3360 BC

95.4% probability: 3640 BC (95.4%) 3340 BC

Wood charcoal taken in a test pit approximately 40 cm below the surface (and below the plow zone) in the Predynastic settlement that had been disturbed by cultivation in the 1950s and 1960s. Collected 1991 by K Bard.

Comment: This sample was taken just above the dark red paleosol, and although the artifacts in the test pit demonstrate post-Predynastic disturbance, the calibrated dates of the sample suggest a Nagada IIc–IIId2 date for the occupation of the HG village (see Hendrickx 1996:64).

HG-349, DRI-2835

¹⁴C age: 4290 ± 140 BP
Cal age(s), 68.2% probability: 3100 BC (43.5%) 2830 BC
2820 BC (22.5%) 2660 BC
2650 BC (2.2%) 2620 BC
95.4% probability: 3350 BC (95.4%) 2450 BC

Wood charcoal taken in a deposit approximately 5–20 cm below the surface in which the only sherds of marl ware were found at HG. Marl ware is more commonly found in Predynastic burials and is much less common in settlement contexts. Collected 1991 by J Raab-Rust.

Comment: The deposit contained much ash and few artifacts, which the project paleoethnobotanist, Wilma Wetterstrom, thought might represent ashy deposits that were removed from village houses and dumped on the edge of the village (Wetterstrom, personal communication). The calibrated dates of the sample, however, are later than the Predynastic.

HG-526, DRI-2906

¹⁴C age: 4498 ± 131 BP
Cal age(s), 68.2% probability: 3370 BC (66.6%) 3010 BC
2980 BC (0.8%) 2970 BC
2950 BC (0.8%) 2930 BC
95.4% probability: 3550 BC (95.4%) 2850 BC

Wood charcoal excavated about 5–10 cm below the surface in a deposit in the undisturbed area of the main Predynastic settlement, just above the dark red paleosol. Collected 1991 by J Raab-Rust.

Comment: The calibrated dates would suggest the latest occupation of the Predynastic village, in the Nagada IIIa1–IIIc1 phases (see Hendrickx 1996:64).

HG-545, SMU-2754

¹⁴C age: 4860 ± 70 BP
Cal age(s), 68.2% probability: 3720 BC (46.8%) 3620 BC
3590 BC (21.4%) 3520 BC
95.4% probability: 3800 BC (92.5%) 3500 BC
3430 BC (2.9%) 3380 BC

Wood charcoal excavated about 10–15 cm below the surface in the area of a lithics workshop, in which there was abundant charcoal and lenses of ash. Collected 1991 by K Bard.

Comment: Also in this feature was the end fragment of a ground greywacke rhomboid-shaped palette, as found in Predynastic graves dating to late Nagada I and early Nagada II phases (about 3650 BC, Hendrickx 1996:64). The relative dates of these burials would accord well with the calibrated dates of the sample.

HG-655, DRI-2905

¹⁴C age: 4731 ± 132 BP
Cal age(s), 68.2% probability: 3650 BC (68.2%) 3360 BC
95.4% probability: 3800 BC (95.4%) 3050 BC

Wood charcoal excavated approximately 10–15 cm below the surface in deposits of overlapping ash and sand lenses with abundant charcoal, lithics, and a Nagada Ic C-class sherd. Collected 1991 by S Savage.

Comment: The calibrated age of 3650 BC would be appropriate for the Nagada Ic sherd.

CONCLUSION

Wood charcoal taken from the excavated units at site HG is Predynastic in date, whereas wood charcoal from site SH is Predynastic and Old Kingdom in date. The contexts of these samples indicate

disturbance of the sites in ancient and modern times and at HG, there is also evidence of slope wash and erosion.

There is no evidence at HG of any kind of permanent settlement, however, and occupation may have been sporadic and/or seasonal. Given a lack of such evidence, possibly another more permanent settlement existed on the floodplain and is now destroyed or covered with river sediments. The existence of such a site would explain the presence of a large Predynastic cemetery (B) that Petrie excavated at Abadiyeh with a number of high-status burials.

A calibrated date of 3800–3500 BC (HG-545, SMU-2754) for wood charcoal from a lithics workshop, in which a fragment of a rhomboid-shaped palette was found, accords well with a relative date of Nagada Ic–IIa for this artifact. This calibrated date, along with that of another sample (HG-655, DRI-2905) associated with a Nagada Ic C-class potsherd, would place the transition from Nagada I to Nagada II at about 3600 BC.

Wood charcoal (HG-332, DRI-2834) excavated at HG under a deep deposit of sterile, windblown sand, and associated with a hearth but no potsherds or lithics, provides evidence of the earliest use of the site, possibly predating the occupation of Nagada culture peoples.

Both sites HG and SH were in use in the Old Kingdom, as the calibrated dates of several samples demonstrate, at which time there was much disturbance of the earlier Predynastic debris.

Calibrated dates of samples from HG of the 4th millennium BC indicate a Predynastic village occupied from about 3700 BC (HG-545, SMU-2754) to about 3200/3100 BC (HG-526, DRI-2906). Although the site was disturbed in ancient and recent times, wood charcoal samples collected in contexts with Predynastic potsherds and lithics provide more relative and absolute dates for the Predynastic Nagada culture.

ACKNOWLEDGMENTS

Funding for this project was provided by grants from the National Geographic Society, Committee for Research and Exploration. The author gratefully acknowledges their support of this project.

I would also like to thank Andrea Manzo of the Instituto Universitario Orientale, Naples, Italy, for calibrating the dates BC of the 12 charcoal samples from sites HG and SH, which he very generously offered to do in 2000. In 2003, Larry Pavlish of the Department of Physics (Isotope), University of Toronto, calibrated the dates of the 12 samples using an updated program. Sally Swain was the project's ceramic analyst who studied the excavated potsherds and placed them in a relative sequence based on Werner Kaiser's seriation (1957).

REFERENCES

- Bard KA. 1989. Predynastic settlement patterns in the Hu-Semaneh Region, Egypt. *Journal of Field Archaeology* 16:475–78.
- Bard KA. 1991. Egypt, Halfiah Gibli and Semaneh H, Hiw. In: Hedges REM, Houseley RA, Bronk RA, van Klinken GJ. Radiocarbon dates from the Oxford AMS System: Archaeometry Datelist 12. *Archaeometry* 33(1):129–30.
- Bard KA. 1992. Preliminary report: the 1991 Boston University excavations at Halfiah Gibli and Semaneh, Upper Egypt. *Newsletter of the American Research Center in Egypt* 158/159:11–5.
- Hassan FA. 1984. Radiocarbon chronology of Predynastic Naqada settlements, Egypt. *Current Anthropology* 25:681–3.
- Hassan FA. 1985. Radiocarbon chronology of Neolithic and Predynastic sites in Upper Egypt and the Delta. *African Archaeological Review* 3:95–116.
- Hassan FA, Robinson SW. 1987. High-precision radiocarbon chronometry of ancient Egypt and comparisons with Nubia, Palestine and Mesopotamia. *Antiquity* 61:119–35.

- Hendrickx S. 1996. Relative chronology of the Naqada Culture. Problems and possibilities. In: Spencer J. *Aspects of Early Egypt*. London: British Museum Press. p 36–69.
- Görsdorf J, Dreyer G, Hartung U. 1998. New ¹⁴C dating of the Archaic Royal Necropolis Umm el-Qaab at Abydos (Egypt). *Radiocarbon* 40(2):641–7.
- Kaiser W. 1957. Zur inneren Chronologie der Naqadakultur. *Archaeologia Geographica* 5/6:69–77.
- Petrie WMF, Quibell JE. 1896. *Naqada and Ballas*. London: British School of Archaeology in Egypt.
- Petrie WMF. 1901. *Diospolis Parva. The Cemeteries of Abadiyeh and Hu*. London: Egypt Exploration Fund.